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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/068,981

02/11/2002

Tetsuto Kageyama

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10/24/2002

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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s) <i>OK</i>	
	10/068,981	KAGEYAMA, TETSUTO	
	Examiner	Art Unit	
	LAM S NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-8 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 2001/0017641 A1) in view of Takemura et al. (US 5988784).

Referring to claim 1:

Kobayashi et al. disclose an ink jet recording apparatus comprising:

a recording head (FIG. 1, element 1) for recording data on a recording medium by discharging ink from a plurality of discharge ports;

a carriage having the recording head mounted thereon for reciprocally scanning the surface of said recording medium (Fig. 1, element 1);

recording medium carrying means for carrying said recording medium by a predetermined distance in the direction perpendicular to said scanning direction of the carriage each time the carriage reciprocally scans the surface of said recording medium (Fig. 1);

an ink storage tank placed in a position where reciprocal scanning by said carriage and carrying of said recording medium by said recording medium carrying means are not affected by the ink storage tank (FIG. 1, elements 9a-d);

a supply tube for supplying ink from the ink storage tank to said recording head (FIG. 1, element 10);

said control means for controlling ink discharge states of said recording head in accordance with an image signal input from a host computer (FIG. 1: a corresponding controller to operate the printhead).

Referring to claim 4: wherein a pressure smoothing tank capable of storing a predetermined capacity of ink in order to suppress a negative pressure rise in said supply tube is set between said supply tube and said recording head (FIG. 1, elements 7a-d).

Referring to claim 7: further comprising recovery system means for recovering the ink discharge state of said recording head to a preferable state by forcibly discharging ink from each discharge port of said recording head (FIG. 1, element 11).

Kobayashi et al. do not disclose wherein said recording head comprising an electrothermal converting element (**Referring to claim 8**) and the control means controls the scanning speed of said carriage, controls a non-recording time during which no ink is discharged from said recording head (**Referring to claim 2**), controls the repetitive recording scanning frequency of the carriage in accordance with the temperature, detected by a temperature sensor (**Referring to claim 6**), of the ink supplied from said ink tank to said ink supply tube (**Referring to claim 3**) (column 14, line 10-20)

However, Takemura et al. disclose wherein a recording head comprising an electrothermal converting element (column 1, line 18) and a control means controls the scanning speed of said carriage, controls a non-recording time during which no ink is discharged from said recording head, controls the repetitive recording scanning frequency of the carriage in accordance with the temperature, detected by a temperature sensor, of the ink supplied from said ink tank to said ink supply tube (column 14, line 10-20).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to replace the control means of the printhead disclosed by Kobayashi et al. by the control means that controls the scanning speed of said carriage, a non-recording time during which no ink is discharged from said recording head, the repetitive recording scanning frequency of the carriage in accordance with the temperature of the ink supplied from said ink tank to said ink supply tube as disclosed by Takemura et al. The motivation of doing so is to prevent the deviation of dots formed by the plural recording heads due to the changes in the environment of the apparatus in order to record high quality images as taught by Takemura et al. (Abstract).

Allowable Subject Matter

2. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The most pertinent arts Kobayashi et al. (US 2001/0017641 A1) and Takemura et al. (US 5988784) fail to disclose wherein the predetermined capacity of said pressure smoothing tank is 1 cc or more. Therefore, the claimed invention is not disclosed by the prior arts.

3. Claims 9-11 are allowed.

Referring to claim 9: The most pertinent arts Kobayashi et al. (US 2001/0017641 A1) and Takemura et al. (US 5988784) fail to disclose the comprising of a step of lowering the scanning speed of said carriage when the temperature of the ink supplied from said ink tank to said ink supply tube is lower than a reference temperature. Therefore, the claimed invention is not disclosed by the prior arts.

Referring to claim 10: The most pertinent arts Kobayashi et al. (US 2001/0017641 A1) and Takemura et al. (US 5988784) fail to disclose the comprising of a step of increasing a non-recording time during which no ink is discharged from said recording head when the temperature of the ink supplied from said ink tank to said ink supply tube is lower than a reference temperature. Therefore, the claimed invention is not disclosed by the prior arts.

Referring to claim 11: The most pertinent arts Kobayashi et al. (US 2001/0017641 A1) and Takemura et al. (US 5988784) fail to disclose the comprising of a step of increasing the repetitive recording scanning frequency by said carriage when the temperature of the ink supplied from said ink tank to said ink supply tube is lower than a reference temperature. Therefore, the claimed invention is not disclosed by the prior arts.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gray et al. (US 635021) disclose a recording system including a control means that maintains substantially constant temperature by sensing the temperature of the ink in droplet generators, then adjusting the temperature of the ink in a ink path from a supply tank to the droplet generators.

Misuno (US 4337468) discloses that the variation in ambient temperature causes the variation in viscosity of ink in a tube from which ink drops fall into the container. As a result, the ink drop frequency varies.

Yamamoto et al. (JP 4050844922A) disclose a recording device including a pipe that feeds ink from a tank to a printhead. The ink pipe has the thermal conductivity and little heat capacity in order to fix temperature of the ink flowing in the pipe.

Yano et al. (US 5166699) teach the relation between the temperature distribution in the recording head and the recording speed of a printhead.

Watanabe (US 4544931) teaches a printhead including a control means for controlling the frequency of the repetitive driving of the head by the driving means in accordance with the ambient temperature.

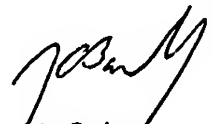
Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BARLOW can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

October 16, 2002


John Barlow
Supervisory Patent Examiner
Technology Center 2800